

### Abstract of the Disclosure:

Plasma fluid removal is needed in a variety of clinical conditions including congestive heart failure and moderate renal insufficiency. In order to avoid the problems inherent in extracorporeal ultrafiltration methods, the present invention removes fluid using an intravascular or intracorporeal dual-lumen catheter. Plasma fluid is driven across a semipermeable membrane, as in an *in vivo* vascular catheter. Suboptimal intracatheter flow, luminal collapse, erratic high transmembrane flow with nonhomogenous caking and clotting of the external catheter surface are all avoided by inducing pressure gradients across the wall by means of osmotic forces instead of negative pressures induced by hydraulic pumps. Osmotically induced fluid flow would tend to keep the lumena slightly distended and thereby simplify the fluid delivery systems. Osmotic gradients are maintained by utilizing dual lumen catheters typically placed in large central veins, and attached to pumps supplying high osmolality sterile solutions (such as dextrose or other sugars). Such a sealed system using readily available sterile sugar solutions and biocompatible catheter substrate would be extremely safe.